

Date: January 3, 2012

To: Thomas J. Bonfield, City Manager
Through: Theodore L. Voorhees, Deputy City Manager
From: Mark D. Ahrendsen, Director of Transportation
Subject: Presentation on the Bus on Shoulder System (BOSS) Pilot Program on I-40 in Durham County

Executive Summary

Bus on shoulder operation is a low-cost treatment that can provide immediate benefits to transit whenever mainline travel is experiencing moderate to heavy degrees of congestion. Bus on shoulder operation allows authorized transit buses with trained drivers to operate on the shoulders of selected freeways and other highways in order to bypass congestion and maintain transit schedules.

NCDOT and Triangle Transit will implement a pilot bus on shoulder program on portions of I-40 in Durham County in 2012. This pilot implementation of a Bus on Shoulder System (BOSS) initiative in our region will be the first of its kind in North Carolina. Under North Carolina BOSS guidelines, authorized transit buses will only be able to use designated shoulders when travel speeds are below 35 MPH in the main lanes and these buses will only be able travel up to 15 MPH faster than other vehicles.

It is important to recognize that BOSS operation is a subservient use of the shoulder: the primary use of the shoulder as a breakdown lane for emergency operations continues as today and buses must yield to everything in the shoulder.

If the pilot program proves to be successful, the program could be expanded to other segments of I-40 and/or other routes in Durham County and elsewhere in the Triangle with the goal of creating a regional bus on shoulder system.

Recommendation

Staff recommends that the Council receive a presentation concerning North Carolina's first pilot implementation of bus on shoulder, which will take place on I-40 in Durham County in the first half of 2012.

Background

Improvements to transit operations are included in the Long Range Transportation Plan (LRTP) of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO) and have been a priority for the City and the region for a number of years. Bus improvements are vital to enhancing transit in Durham, and one potential method for improving bus transit is through the implementation of a bus on shoulder program, which is a

low-cost treatment that can provide immediate benefits to transit whenever mainline travel is experiencing moderate to heavy degrees of congestion.

Bus on shoulder operations were first implemented in Minnesota around 20 years ago, with nearly 300 shoulder-miles in use today in the Twin Cities metro area alone. Bus on shoulder operation allows authorized transit buses with trained drivers to operate on the shoulders of selected freeways and other highways in order to bypass congestion and maintain transit schedules.

Buses can only use shoulders when travel speeds are below 35 MPH in the main lanes and buses can only travel up to 15 MPH faster than other vehicles. In addition, bus on shoulder operation is a subservient use of the shoulder: the use of the shoulder as a breakdown lane for emergency operations continues as today and buses must yield to everything in the shoulder.

See the table below for an amplification of these guidelines under various operating speeds.

| Bus on Shoulder guidelines for North Carolina | |
|--|---|
| <u>If travel speeds in main lanes are:</u> | <u>Then transit buses on shoulder:</u> |
| 65 MPH, 55 MPH, even 35-40 MPH | N/A: Cannot use shoulder |
| 20, 25, 30, 35 MPH | Can go up to 35 MPH |
| 15 MPH | Can go up to 30 MPH |
| 10 MPH | Can go up to 25 MPH |
| 5 MPH | Can go up to 20 MPH |
| Stopped (0 MPH) | Can go up to 15 MPH |

Bus on shoulder operations carries the potential for providing immediate and significant improvements to both travel times and schedule certainty for transit users, and operating cost savings for transit providers. Minnesota has identified a number of benefits with bus on shoulder operation, including:

- Shorter and more predictable and reliable transit travel times
- Fewer missed transfer connections
- Increased transit ridership
- Reduced driver overtime
- Decreased operational costs

In some cases, travel times have decreased enough that one or more buses can be eliminated and/or redeployed to other routes, which improves the level of service for transit users.

Today, more than 10 states now use bus on shoulder and no state has discontinued an operating bus on shoulder program for operational or safety reasons once commenced. A list of states that currently have active bus on shoulder operations can be found in the table below.

| Region | States |
|------------------------|----------------|
| Northeast/Mid-Atlantic | NJ, DE, VA, MD |
| South | FL, GA |
| Midwest | MN, OH, IL, KS |
| West | CA, WA |

The BOSS program has been coordinated by the I-40 Regional Partnership, which is a cooperative initiative of NCDOT and local, regional, State, and national partners. Durham City staff and Durham-Chapel Hill-Carrboro MPO staff have been active participants in the Partnership since its inception in 2009.

The triannual meetings of the I-40 Regional Partnership have included a number of updates or presentations on the proposed BOSS program. These have included:

- June 15, 2010 – I-40 Regional Partnership meeting at NetApp in Research Triangle Park
 - Initial presentations on bus on shoulder, including videoconference with MN colleagues
- September 24, 2010 – I-40 Regional Partnership meeting at Fidelity Investments in Durham
- December 7, 2010 – I-40 Regional Partnership meeting at RTP headquarters
- April 26, 2011 – I-40 Regional Partnership meeting at NetApp in Research Triangle Park
- September 14, 2011 – I-40 Regional Partnership meeting at Cisco in RTP
- December 6, 2011 - I-40 Regional Partnership meeting at Fidelity Investments in Cary

In addition to the periodic updates at triannual I-40 Regional Partnership meetings, the I-40 Partnership created a Bus on Shoulder Systems implementation and operations team in early 2011. The BOSS team has had several meetings, primarily held at Triangle Transit headquarters in Durham.

BOSS team meetings have been held on:

- March 24, 2011 – BOSS Team optional orientation meeting, held at Triangle Transit
- April 14, 2011 – 1st BOSS team meeting, held at Triangle Transit
- May 12, 2011 – 2nd BOSS team meeting, held at Triangle Transit
- August 11, 2011 – 3rd BOSS team meeting – TelePresence videoconference with colleagues from MN and OH, held at Cisco Systems
- September 8, 2011 – BOSS team meeting, held at Triangle Transit
- November 17, 2011 – BOSS team meeting, held at Triangle Transit
- December 9, 2011 BOSS team meeting, held at Triangle Transit

In addition to the above, members of the I-40 Regional Partnership held a briefing for Durham City staff on October 11, 2011 at Durham City Hall. City staff from the Transportation, Police, and Fire departments attended the briefing. Staff members from NCDOT and the Regional Transportation Alliance (RTA) also participated in the briefing.

The I-40 Regional Partnership also held a working visit to Minneapolis-St. Paul from October 31-November 2, 2011 to see the BOSS program and other transit and travel enhancements first hand. Staff from the Durham Police Department participated in this trip which included

multiple field visits as well as presentations from staff from Minnesota DOT and two transit providers.

Issues and Analysis

There have been a series of questions from I-40 Regional Partnership and BOSS Team participants concerning operations and enforcement under the proposed BOSS program and the Partnership has proceeded in a purposeful, deliberate manner to answer these questions. The Partnership's research and outreach efforts have included expert presentations, multiple videoconferences with out-of-state colleagues, as well as a field visit in fall 2011, as noted above. As a result of the ongoing presentations, meetings, and field visit, many of the initial questions concerning operations and enforcement associated with the proposed BOSS program have been resolved or alleviated. However, the initial implementation of BOSS in North Carolina will be a pilot and adjustments to the program can be expected as NCDOT, transit providers, law enforcement and other emergency response providers, and other partners, as well as the general public, become accustomed to the program.

The North Carolina pilot bus on shoulder program will take place on portions of I-40 in Durham County in the first half of 2012. In the westbound direction of I-40, the pilot segment will begin immediately west of the NC 147/Toll 147 interchange and continue to the US 15-501 interchange. In the eastbound direction of I-40, the pilot segment will begin at US 15-501 and continue east to the Page Road interchange area. The entire pilot is approximately 20 shoulder-miles.

The specific date of the pilot implementation will be determined by Triangle Transit and NCDOT in consultation with members of the BOSS Team. Remaining items to be completed before implementation of the pilot program include:

- Complete NC BOSS Implementation/Operations Plan
- Develop pilot communications, enforcement protocols
- Implement BOSS training for Triangle Transit drivers
- Create signage and prepare corridor for BOSS operation
- Implement public education and outreach program
- Development of pilot project evaluation framework by NCDOT and Triangle Transit

If the pilot proves to be successful, the program could be expanded to other segments of I-40 and/or other routes with the goal of creating a regional bus on shoulder system.

Alternatives

- Proceed with the BOSS pilot program on I-40 in Durham County.
- Proceed with the BOSS pilot program on some other roadway.
- Do not proceed with the BOSS pilot program.

Financial Impact

There is no expected impact to the City budget associated with the BOSS pilot program. No current DATA routes use I-40, therefore, there are no anticipated operating cost savings to DATA. However, if the pilot were to prove to be successful and if the BOSS program were subsequently expanded to one or more roadways in Durham County that were used by DATA buses, then DATA could experience operational cost savings from bus on shoulder operation on those routes in the future (and/or improved service).

SDBE Summary

There are no SDBE requirements for this pilot program.

Attachments

Attachment A – One page summary of BOSS

Attachment B – Map showing location of BOSS pilot in Durham County

Attachment C – Proposed presentation on BOSS to City Council at January 19, 2012 work session